stations in France at which the observations cover a period of fifty years, from 1851–1900, but fairly long periods are given for fifty-eight stations which constitute the principal values dealt with. Mean temperature charts are given for each month, and there are also seasonal charts for winter, summer, and for the year. Diurnal range of temperature is also dealt with. Barometric pressure is treated in a very similar manner to the temperature, and mean pressure charts are given for all months and for the year. A chapter is devoted to the disturbances of the atmosphere, and a detailed description is given of the general movement of cyclonic and anticyclonic systems. Maps are given showing the prevailing winds and the resultants for the four seasons of the year. M. Bigourdan provides a good *résumé* of the climate of France in about 130 pages, and the information is expressed in a popular manner, although its scientific accuracy is all that could be wished. The numerous charts enable the reader to obtain the several meteorological factors for any part of France.

The Psychology of Relaxation. By Prof. G. T. Patrick. Pp. viii+280. (London: Constable and Co., Ltd., 1916.) Price 5*s.* net.

ON the further side of the Atlantic one of the world's great peoples has been swept away by a passion for wild and crazy amusement; on this side the others are locked in the bloodiest war the world has seen: these are the phenomena, at first sight antithetically diverse, which Prof. Patrick brings together in his study of "relaxation." With them he sets the craving for alcohol, constantly rising in spite of prohibitive legislation, and—*longo intervallo*—the habits, widespread if not omnipresent, of laughter and profane language. In the author's view all these forms of human behaviour are, at bottom, illustrative of a single principle. The activities and relations of civilised life imply the upbuilding and functioning of extremely complex mental mechanisms, full of tensions, restraints, and inhibitions. To maintain these always in operation is an impossible task. From time to time, therefore, the complexes break up, and man falls back with relief into conduct expressive of simpler mental structures organised and consolidated in the far distant days of the race's childhood: he plays, he laughs, he swears, he fights. Alternatively, he seeks the same end—the temporary dissociation of his too complex mental mechanisms—by means of the narcotic power of alcohol.

Prof. Patrick finds much to say in defence of his thesis—even for his rather startling view of war as a gigantic "rest-cure"—and says it very well. The cautious reader will, however, feel that he has pressed a sound principle of interpretation much too far—that he has brought into clear relief one factor in the phenomena he analyses, but at the expense of neglecting others of equal significance. Still, *his* factor is undoubtedly one of great importance, and his exposition of its *rôle* is both informative and pleasant to read.

T. P. N.

LETTERS TO THE EDITOR.

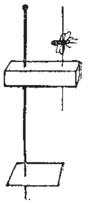
[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Elasticity and Entomology.

IN NATURE for June 22 (vol. xcvii., p. 340) there appeared an interesting letter under the above heading from the pen of Prof. Bryan. Perhaps I may be permitted to contribute some further remarks on the same subject, although my distance from the centre of Empire must necessarily entail a long delay before publication.

Unfortunately, the method of setting insects upon "Continental" pins does not appear to be "old-fashioned," for a large number of specimens received by me from all countries (excluding England, where, on the other hand, the insects are often set too low) are set in this obnoxious manner. In dealing with the same I always handle them by placing the forceps upon them under the insect, at a point only slightly above the level to which they are to be driven into the cork. Even so, the danger of vibrations, causing loss of antennæ, etc., cannot wholly be obviated. After many years' experience I have come to the conclusion that the shorter pins of English make, be they "silvered," "gold," or black, are in every way preferable to the long German pins. The insect should, however, be set at least half-way up the pin, and not so low down as is necessitated by the construction of many of the peculiar "curved" setting-boards still in use in England.

Using the numbers of the well-known "Kirby and Beard" make of pins, out of the following numbers which I have in use every day, viz. 1, 3, 5, 8, 15, 17, and 19, Nos. 1, 3, 5, and 8 may be classed as *stout*, and can be relied upon never to bend when inserted into cork or "lino," unless handled extremely roughly. Nor, so far as I can see, is there any deterioration in the elastic quality of such pins over a period of at least twenty years. On the other hand, Nos. 15, 17, and 19 must be classed as *slender* pins, and can never be relied upon, for certain, not to buckle under the pressure necessary to place the insect firmly in the cabinet. As all the smaller kinds of insects must be set upon one or other of these pins, or upon the even smaller silver-wire pins known as "caps," I have come to the conclusion that the only safe plan in all these cases is to use the Polyporus strips first suggested by Lord Walsingham—who, I believe, found this fungus growing in Merton Park, and ingeniously turned it to entomological use. As these strips are now sold by at least one firm in Australia, no doubt they are easily obtainable in England. A short piece of the strip is cut off and placed on a No. 8 pin, as shown in the illustration; the finer pin carrying the insect is gently inserted into the other end of the strip. The label may then be placed on the larger pin, below the strip, *facing upwards*, so that it can be read without moving the insect. I have a series of a new species of Coniopterygid, expanse only 3 mm., and the smallest Neuropterous insect known to me, set in this manner upon "caps," and they look extremely neat in the cabinet.



Returning to the subject of vibrations, might I suggest the use of a very simple expedient to obviate the constant breaking-up of the abdomen in those insects with long or fragile bodies, such as dragonflies? This is the process of bristling, which I have used with success for years, but which I have never

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seen adopted in the setting of specimens received from my brother entomologists. For large species the "bristle" should be a true hog's bristle of the kind obtainable at curriers'; for smaller, a stiff horsehair. The "bristle" is sharpened by a diagonal cut with the scissors, and is then inserted between, and a little in front of, the mesocoxæ, and is run down to near the end of the abdomen, care being taken not to damage the appendages, and allowing a little space over for shrinkage during drying. It is then cut off close to the thorax. Even the soft-bodied Perlidæ can be much improved by this method.

R. J. TILLYARD.

Hornsby, N.S.W.

Early Use of the Word "Blizzard."

IN a communication to NATURE of June 22 (vol. xcvii., p. 341) Mr. Miller Christy states that the first appearance of the word "blizzard" in "permanent literature" was in 1885, when he used it in his work, "Manitoba Described," and that the description of the phenomenon therein by Mr. Thompson Seton was the earliest ever published.

As one of the American meteorological specialities, the blizzard has always received attention by the Canadian and United States Weather Bureaus. The very earliest use of the word has not yet been ascertained, but it has been found in current use as the name of the storm Mr. Christy describes, at least as early as 1867. In that year the *Dakota Republican* published, at Vermilion, Dakota, an account of the blizzard that suddenly approached that town, and called the storm by *that name as one in common use* when applied to a sudden change from warm and balmy weather to a blinding snow with cold north-west winds.

The earliest known description of "blizzard" phenomena seems to have been that by Henry Ellis in his account of his visit to Hudson's Bay in the *California* in 1746, and his winter at York Factory. However, Ellis did not apply the name "blizzard" to the storms he described.

Brief notes on the name "blizzard" will be found in the *Monthly Weather Review*, Washington, December, 1898, p. 562; January, 1899, p. 18; and December, 1914, p. 692.

The name "blizzard" for "a cold-wave gale with very low temperature and fine driving snow" is recorded by C. A. Lounsberry as being in use in Dakota, Iowa, and Minnesota as early as 1865. The *American Meteorological Journal*, July, 1886, pp. 112–14, quotes an excellent description of the blizzard by Mr. Lounsberry in the *Northwest Magazine*.

OTTO KLOTZ.

Dominion Observatory, Ottawa, October 2.

THE FUTURE OF THE ZINC-SMELTING INDUSTRY IN GREAT BRITAIN.

IN 1913 the world's production of the metal zinc, or, to give it its trade name, spelter, was 985,142 English tons (2240 lb.). Of this Great Britain produced 58,298 tons, *i.e.* 5·9 per cent. On the authority of Moulden,[1] however, it may be stated that "probably not more than 31,290 tons were 'primary' spelter in the sense of being extracted from ores, the balance of 27,008 tons being the result of treatment of by-products, galvanisers' ashes, hard-spelter, etc." In the same year Great Britain imported 145,004 tons of spelter, which, at the average ruling price, "ex ship," represents a total value of 3,291,772*l.* In other words, this country in the year before the outbreak of war was producing—even including "secondary" metal—only 30·1 per cent. of its spelter requirements. The galvanised iron industry absorbed about 60 per cent. of the above production, the manufacture of brass from 20 to 25 per cent., while the remainder was used for the manufacture of sheets, alloys other than brass, etc.

The bulk of the spelter imports was obtained from Germany and Belgium, each of them a large producer of the metal, and each of them a large importer of zinc ore from the most important zinc mine in the British Empire, at Broken Hill, Australia. This ore consists of an intimate mixture of argentiferous galena and blende occurring in a gangue chiefly composed of rhodonite, quartz, and garnet. It is treated by concentration and separation processes so as to give two main products, a lead ore and a zinc ore concentrate, the latter containing about 46–48 per cent. of zinc with certain values in lead and silver. The output of zinc concentrates before the war was about 500,000 tons annually. Apart from the ore which was smelted at Port Pirie, and about 20,000 tons which were sent to England and smelted at the Sulphide Corporation works at Seaton Carew, "the whole of the zinc concentrates in the past has been sold under long-term contracts to smelters in Belgium and Germany."[2] The Germans had acquired a controlling interest in the most important Belgian works, and, according to Moulden, utilised this control to make money, which they did by passing the greater part of their concentrates on to the Belgian works for smelting. "Of the total Australian output Belgium smelted at least 75 per cent. and Germany only 14 per cent."[3]

On the outbreak of war in August, 1914, the following situation arose:—

(1) Germany was unable to take delivery of Broken Hill concentrates owing to the command of the seas which Great Britain immediately obtained and has ever since held.

(2) The Belgian works, which soon fell into German hands as a result of the military invasion, were equally unable to receive their share of the concentrates.

(3) Australia thus lost nearly all her market for zinc concentrates.

(4) Great Britain was deprived of by far the greater part of her imports of spelter.

Great Britain thus found herself in the anomalous and dangerous position that, with the command of the seas and an immense supply of zinc ore in the Empire, there was, owing to the lack of smelting works, no prospect of converting it into metallic zinc; and zinc as a constituent of cartridge brass is an indispensable munition metal. It is, of course, obvious that such a situation should never have been allowed to arise, and it will naturally be asked why should not all

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[1] Le Neve Foster Prize Essay. Journal of the Royal Society of Arts, 1916, p. 526.

[2] Smith, "The Development of the Spelter Industry." Journal of the Institute of Metals, No. 2. 1916.

[3] Journal of the Royal Society of Arts, 1916, p. 528.

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